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IV. *A Letter from the Honourable William Hamilton, his Majesty's Envoy Extraordinary at Naples, to Mathew Maty, M. D. Sec.R.S. containing some farther Particulars on Mount Vesuvius, and other Volcanos in the Neighbourhood.*

Villa Angelica, near Mount Vesuvius,  
October 4, 1768.

S I R,

Read February 2,  
1769.

I HAVE but very lately received your last obliging letter, of the 5th of July, with the volume of Philosophical Transactions.

I must beg of you to express my satisfaction at the notice the Royal Society have been pleased to take of my accounts of the two last eruptions of Mount Vesuvius. Since I have been at my villa here, I have enquired of the inhabitants of the mountain after what they had seen during the last eruption. In my letter to Lord Morton, I mentioned nothing but what came immediately under my own observation: but as all the peasants here agree in their account of the terrible thunder and lightning, which lasted almost the whole time of the eruption, upon the mountain only; I think it a circumstance worth attending to. Besides the lightning, which perfectly resembled the common forked lightning, there were many meteors, like what are vulgarly called falling stars. A peasant,

sant, in my neighbourhood, lost eight hogs by the ashes falling into the trough with their food: they grew giddy, and died in a few hours. The last day of the eruption, the ashes, which fell abundantly upon the mountain, were as white almost as snow; and the old people here assure me, that is a sure symptom of the eruption being at an end. These circumstances, being well attested, I thought worth relating.

It would require many years close application, to give a proper and truly philosophical account of the volcanos in the neighbourhood of Naples; but I am sure such a history might be given, supported by demonstration, as would destroy every system hitherto given upon this subject. We have here an opportunity of seeing volcanos in all their states. I have been this summer in the island of Ischia; it is about eighteen miles round, and its whole basis is lava. The great mountain in it, near as high as Vesuvius, formerly called Epomeus, and now San Nicolo, I am convinced was thrown up by degrees; and I have no doubt in my own mind, but that the island itself rose out of the sea in the same manner as some of the Azores. I am of the same opinion with respect to Mount Vesuvius, and all the high grounds near Naples; as having not yet seen, in any one place, what can be called virgin earth. I had the pleasure of seeing a well sunk, a few days ago, near my villa, which is, as you know, at the foot of Vesuvius, and close by the sea-side. At 25 feet below the level of the sea they came to a stratum of lava, and God knows how much deeper they might have still found other lavas. The soil all round the mountain, which is so fertile,

consists of stratas of lavas, ashes, pumice, and now-and-then a thin stratum of good earth, which good earth is produced by the surface mouldering, and the rotting of the roots of plants, vines, &c. This is plainly to be seen at Pompeii, where they are now digging into the ruins of that ancient city ; the houses are covered, about 10 or 15 feet, with pumice and fragments of lava, some of which weigh three pounds (which last circumstance I mention to shew, that, in a great eruption, Vesuvius has thrown stones of this weight six miles, which is its distance from Pompeii, in a direct line) ; upon this stratum of pumice, or *rapilli*, as they call them here, is a stratum of excellent mould, about two feet thick, on which grow large trees, and excellent grapes. We have then the Solfaterra, which was certainly a volcano, and has ceased emptying, for want of metallic particles, and over-abounding with sulphur. You may trace its lavas into the sea. We have the Lago d'Averno and the Lago d'Agnano, both of which were formerly volcanos ; and Astroni, which still retains its form more than any of these. Its crater is walled round, and his Sicilian Majesty takes the diversion of boar-hunting in this volcano ; and neither his Majesty, or any one of his Court, ever dreamed of its former state. We have then that curious mountain, called Montagno Nuovo, near Puzzole, which rose, in one night, out of the Lucrine Lake ; it is about 150 feet high and three miles round. I do not think it more extraordinary, that Mount Vesuvius, in many ages, should rise above 2000 feet ; when this mountain, as is well attested, rose in one night, no longer ago than the year 1538. I have a project, next spring, of passing some days at Puzzole, and of dissecting

dissecting this mountain, taking its measures, and making drawings of its stratas; for, I perceive, it is composed of stratas, like Mount Vesuvius, but without lavas. As this mountain is so undoubtedly formed entirely from a plain, I should think my project may give light into the formation of many other mountains, that are at present thought to have been original, and are certainly not so, if their strata correspond with those of the Montagno Nuovo. I should be glad to know whether you think this project of mine will be useful; and, if you do, the result of my observations may be the subject of another letter.

I cannot have a greater pleasure than to employ my leisure hours in what may be of some little use to mankind; and my lot has carried me into a country, which affords an ample field for observation. Upon the whole, if I was to establish a system, it would be, that *mountains are produced by volcanos, and not volcanos by mountains.*

I fear I have tired you: but the subject of volcanos is so favourite a one with me, that it has led me on I know not how: I shall only add, that Vesuvius is quiet at present, tho' very hot at top, where there is a deposition of boiling sulphur. The lava that run in the Fossa Grande during the last eruption, and is at least 200 feet thick, is not yet cool; a stick, put into its crevices, takes fire immediately. On the sides of the crevices are fine crystalline salts: as they are the pure salts, which exhale from the lava that has no communication with the interior of the mountain, they may perhaps indicate the composition of the lava. I have done. Let me only thank you for

the kind offers and expressions in your letter, and for the care you have had in setting off my present to the Museum to the best advantage ; of which I have been told from many quarters.

I am,

S I R,

Your most obedient,

humble servant,

W. Hamilton.